

- compounds containing at least one photoinitiator group and at least one epoxide-reactive group.

The structural unit I or V, respectively, may in this case be introduced through the use of, for example, dihydrodicyclopentadienol or its maleic monoesters and fumaric monoesters. The structural unit II or VI, respectively, may be introduced accordingly through the use of oligomeric dihydrodicyclopentadienol or its maleic and fumaric monoesters. The photoinitiator group II may be introduced, for example, through the use of 4-hydroxybenzophenone or benzophenonetetracarboxylic acid, benzophenonetetracarboxylic anhydrides, benzophenonetetracarboxylic esters and benzophenonetetracarboxamide. Where polymeric epoxy resins or compounds which are reactive polyfunctionally with epoxide are used, polymers or oligomers are formed.

The polyacrylates (A) for use in accordance with the invention are preferably copolymeric poly(meth)acrylates containing in copolymerized form at least one (meth)acrylate monomer, one ethacrylate monomer and/or one cinnamate monomer, but especially a (meth)acrylate monomer, which contains at least one structural unit I and/or V and/or II and/or VI, and/or the maleic and fumaric monoesters of monomeric and oligomeric dihydrodicyclopentadienol; further (meth)acrylic

esters; and also, if desired, further olefinically unsaturated monomers copolymerizable therewith. Instead of the structural units I, V, II and/or VI or in addition to them the polyacrylates (A) may contain at least one photoinitiator group II. As (meth)acrylate monomer containing at least one structural unit I and/or V and/or II and/or VI, very particular preference in accordance with the invention is given to the use of dihydrodicyclopentadienyl acrylate.

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The photoinitiator group II may be introduced by way of aromatic or part-aromatic compounds which are copolymerizable with (meth)acrylates, are ethylenically unsaturated and are capable before and/or after the polymerization, in the excited-triplet state, of hydrogen abstraction, such as copolymerizable derivatives of benzophenone and substances as described in the patents EP-A-0 486 897, DE-A-38 20 463 and DE-A-40 07 318. These are compounds which are derived from aromatic or part-aromatic ketones or which contain thioxanthone structures.

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The photoinitiator group II may further be introduced by polymer-analogous reaction of epoxide side groups, as obtained by copolymerization of glycidyl methacrylate, with appropriate photoinitiators such as 4-hydroxybenzophenone.

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In the polyacrylates (A) for use in accordance with the invention the photoinitiators II are present advantageously in amounts of from 5 to 80, preferably
5 from 5 to 30% by weight, based in each case on the polyacrylate (A). With regard to cost, their fraction is kept as low as possible. They greatly influence the photosensitivity of the binder mixtures of the invention. The fraction which is optimum for the
10 particular intended use may therefore be determined by the skilled worker by means of simple preliminary tests.

One preferred method of preparing these polyacrylates
15 (A) is that of solvent-free, free-radical bulk polymerization in a stirred reactor, under atmospheric or superatmospheric pressure or, with particular preference, in continuous through-type reactors, at temperatures above the melting point of the polymers
20 formed, preferably above 140°C. This method produces polyacrylates (A) with a low molecular weight and a narrow molecular weight distribution, which in the case of powder coating materials is highly desirable owing to the resultant narrower melting range and the lower
25 melt viscosity. Moreover, with a bulk polymerization there is no need to remove an auxiliary solvent and it is possible to incorporate pigments and coatings